

$$f(x) = -\frac{1}{x}x + 1$$

$$D = \{1, 2, 3, \dots, 9\}$$

$$x=1 \sim -\frac{1}{1} + 1$$

$$x=2 \sim -\frac{2}{2} + 1$$

$$x=3 \sim -1 + 1$$

$$x=4 \sim -\frac{4}{4} + 1$$

$$x=5 \sim -\frac{5}{5} + 1$$

$$x=6 \sim -\frac{6}{6} + 1$$

$$x=7 \sim -\frac{7}{7} + 1$$

$$x=8 \sim -\frac{8}{8} + 1$$

$$x=9 \sim -\frac{9}{9} + 1$$

$$g(x) = 90 + \frac{(-1-2-3-4-5-6-7-8-9)}{9}$$

$$g(x) = 90 - 10 = 80$$

$$f(x) = \sqrt{ax^2 + bx + c} \sim [r, \infty), f(r) = 1$$

$$g(x) = \sqrt{bx^2 + cx + r}$$

$$\begin{cases} f(r) = 0 \sim 2b + c = 0 \\ f(r) = 1 \sim 2b + c = 1 \end{cases} \rightarrow b = 1, c = -2$$

$$g(x) = \sqrt{x^2 + 2} \sim R = [r, \infty)$$

$$f(x) = \frac{x^2 - 4x}{x + 2}, D = R - \{-2\}, R = [c, \infty) - \{N\}, F\left(\frac{a+b}{rc}\right)$$

$$\frac{x(x-4)}{x+2} = \frac{x(x-2)(x+2)}{x+2} = x(x-2) \sim x^2 - 2x = 1 \sim (x-2)(x+2) = 0 \rightarrow x = -2, x = 2$$

$$a = -2, b = 2, \frac{-b}{ra} = \frac{-2}{-2} = 1 \sim y = -1 = c, f\left(\frac{a+b}{rc}\right) = f(-1) = 1 + 2 = 3$$

$$g(x) = \sqrt{x^3 + ax^2 + bx - 1}, D = [a, b], R = ?$$

$$g(x) = ax + b \rightarrow (x^3 + ax^2 + bx - 1) = (ax + b)^3 \sim (ax - 1)^3 = x^3 - 3ax^2 + 3a^2x - 1$$

$$\Rightarrow a = -3, b = 1 \rightarrow D = [-3, 1], x = -3 \sim y = -1, x = 1 \sim y = 1, R = [-1, 1]$$

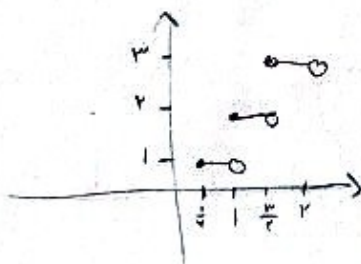
$$g(x) = [x] + [x + \frac{1}{p}]$$

$$[\frac{1}{p}, 2)$$

$$\frac{1}{p} \leq x < 1 \sim [x] = 0 + [x + \frac{1}{p}] = 1$$

$$1 \leq x < \frac{p}{p} \sim [x] + [x + \frac{1}{p}] = 2$$

$$\frac{p}{p} \leq x < 2 \sim [x] + [x + \frac{1}{p}] = 3$$



جواب

الفصل الأول

المعادلات

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$$f(x) = r \sin^2(x + \frac{R}{r}) - 1$$

$$-1 \leq \sin^2 x \leq 1 \sim -1 \leq \sin^2 x \leq 1$$

$$\rightarrow 0 \leq r \sin^2 x \leq r \sim -1 \leq r \sin^2 x \leq 1$$

$$\rightarrow R = [-1, 1]$$

$$g(x) = r \cos^2 x - 1$$

$$-1 \leq \cos^2 x \leq 1 \sim -r \leq r \cos^2 x \leq r$$

$$\rightarrow -r \leq r \cos^2 x \leq r \sim -1 \leq r \cos^2 x \leq 1$$

$$-r \leq r \cos^2 x - 1 \leq -1$$

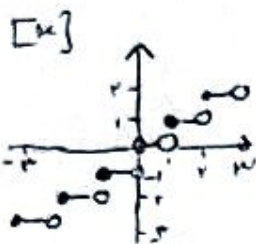
$$R = [-r, -1]$$

$$y = \frac{x}{|x|} + [x]$$

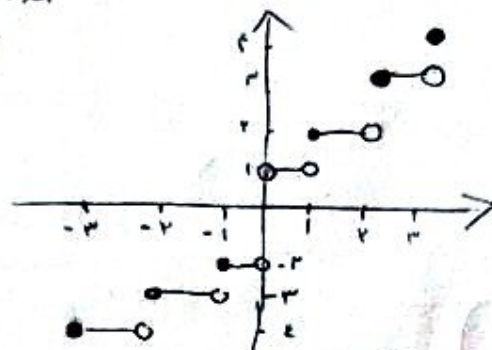
$$x > 0 \sim 1 + [x]$$

$$x < 0 \sim -1 + [x]$$

$$x \neq 0$$

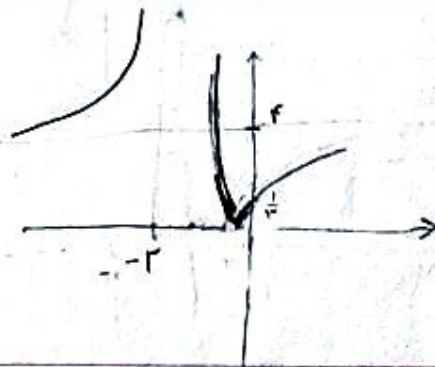
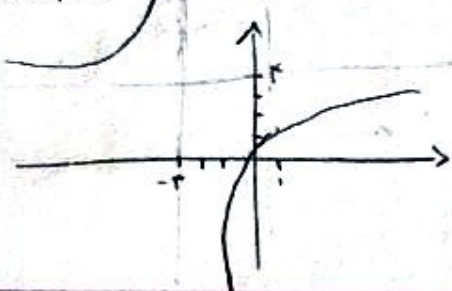


$$y = \frac{x}{|x|} + [x]$$

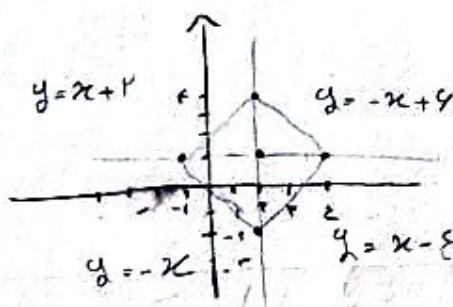


$$y = \left| \frac{x+1}{x+2} \right|$$

$$\frac{x+1}{x+2} \sim$$



$$|x-1| + |y-1| = 1$$



$$f(x) = x + \frac{1}{x} + r\sqrt{x + \frac{1}{x}}$$

$$\sqrt{x + \frac{1}{x}} = a \sim a' + r'a$$

$$x + \frac{1}{x} = r^2 \sim a = \sqrt{r^2}$$

$$+\infty \sim \infty$$

$$-\frac{b}{ra} = -\frac{r}{r} = -1$$

$$R = [r + \sqrt{r}, \infty)$$

$$g(x) = (r - \sin x)(1 + \sin x)$$

$$\sin = 1 \sim r + 1 = 2$$

$$\sin = -1 \sim r - 1 = 0$$

$$-\frac{b}{ra} = -1 \sim 0$$

$$R = [0, 2]$$